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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,486	10/17/2006	Alexander Poschalko	4804-5	2589
23117 7590 02/03/2009 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
KAHN, RACHEL				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/593,486

**Applicant(s)**

POSCHALCO ET AL.

**Examiner**

RACHEL KAHN

**Art Unit**

4131

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 April 2008.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 13-24 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 13-24 is/are rejected.  
7) ☒ Claim(s) 13, 18, 20 and 21 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 20 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/003)  
Paper No(s)/Mail Date 9/20/06, 10/23/06, 4/1/08  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Objections*

Claims 18 and 20 are objected to because of the following informalities: Claims 18 and 20 contain references to claim 5, which is cancelled. For the purposes of this examination, the examiner assumes applicant intended these references to "claim 5" to be to "claim 17." Appropriate correction is required.

Claim 13 is objected to because of the following informalities: There is a typographical error in the phrase "and wherein In the above definition the symbol..." The word "In" should not be capitalized.

The line shown below is missing a space between two separate compounds:  
or a moiety of benzophenone-3, benzophenone-4,2,2',4,4'-tetrahydroxy-benzophenone

Appropriate correction is required.

Claim 21 is objected to because of the following informalities: The phrase "...together with the carbon atoms to which *the* are attached..." should read "...*they* are attached..." Appropriate correction is required.

### *Information Disclosure Statement*

The reference to WO97/123882 is in error – For the purposes of this examination, the examiner assumes it should read WO 97/12882, which was cited elsewhere in an IDS.

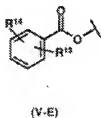
***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13-18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plummer et al (WO/2003/016392). The US PG Pub equivalent, **US 2005/0038167**, will be cited below.

Plummer discloses a composition comprising dendritic or hyperbranched polymers [0025] which can be chain terminated with benzoic acid [0036]. Benzoic acid corresponds to the following structure in instant claim 13:



With regards to a cosmetic carrier, Plummer teaches that the dendritic or hyperbranched polymers can be combined with cosmetic functional compounds for use on skin or hair, including sunscreens [0044].

Plummer fails to explicitly teach that the hyperbranched polymer is bonded to **at least three** benzoic acid chromophores. However, Plummer teaches that hyperbranched polymers have at least 16 end groups per molecule for second

generation materials, and that this number increases for each successive generation [0026]. It would be obvious to one of ordinary skill in the art, therefore, that the hyperbranched polymers would contain 16 or more benzoic acid end groups per polymer.

The recitations of instant claims 14-16 can be found in [0026], as well as in [0047], where Plummer cites the use of Boltorn hyperbranched polymers. In example 1 [0049], Plummer teaches the use of two, three or four pseudo-generation OH terminated Boltorn hyperbranched polymer. A product data sheet from Boltorn (copy included with action, see page 11), shows that the polymers used meet the instant recitations.

The limitations regarding the structure of the hyperbranched polymer recited in instant claims 17 and 18 are satisfied by Plummer's description of hyperbranched polymers in [0025].

Claims 13-17 and 20-23 rejected under 35 U.S.C. 103(a) as being unpatentable over Muscat et al (in *Topics in Current Chemistry*, Vol 212, 2001, pp 41-80).

Muscat teaches hyperbranched polyesteramides which are suitable for use in cosmetics, based on diisopropanolamine and phthalic anhydride (see abstract, p 41). Muscat teaches that the polymers can be functionalized with benzoic acid (p 51, 2.2.1). Muscat shows that functionalization with benzoic acid capping groups does not influence the glass transition temperature of the polymer (p 53, fig 12).

Muscat fails to explicitly teach that at least 3 benzoic acid units are bonded to the hyperbranched polymer. However, one of ordinary skill in the art would recognize that a typical hyperbranched polymer has more than three free end groups. In view of the data presented in figure 12 showing that all free hydroxyl groups can be functionalized with benzoic acid, it would be obvious that Muscat has prepared polymers with more than three benzoic acid units covalently attached.

Muscat also fails to explicitly teach a "cosmetically acceptable carrier" as recited in instant claim 13, however, given Muscat's teaching that the compounds are suitable for use in cosmetics, it would be obvious to one of ordinary skill in the art to use such a carrier.

Regarding instant claim 14, Muscat teaches a degree of branching between 30-45% (p50, line 2).

Regarding instant claim 15, Muscat teaches molecular weights which fall within the recited range in Table 1 (p 49).

Regarding instant claim 16, the structures in many of the figures (see fig 7, p 47; fig 15 p 58; fig 26 p 73) contain a number of dendritic building blocks within the recited range.

The hyperbranched polymers described by Muscat fit the formulas presented in instant claims 17, 20 and 21. Regarding claim 21 in particular, Muscat most frequently uses hexahydrophthalic anhydride in examples (e.g. fig 14, p 56), however, Muscat teaches a number of other anhydrides that fit formula IV in the instant claim (see fig 9, p 49).

Regarding instant claims 22 and 24, Muscat teaches functionalization with polyethyleneoxide (see fig 26, p 73). As to the recitation in claim 24 that the chain contains 1-20 carbon atoms, Muscat fails to disclose a suitable range for the number of carbon atoms. However, given Muscat's teaching that the hydrophilicity of the polymer can be adjusted by changing the chain length of the polyethyleneglycol, it would be obvious to one of ordinary skill in the art to employ a chain with 1-20 carbon atoms.

Claims 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plummer as applied to claims 13 and 17 above, and further in view of Sunder et al (in *Macromolecules*, **1999**, 32, pp 4240-4246).

Plummer teaches that a hyperbranched polymer can be prepared by condensation of AB<sub>m</sub> type monomers with a B<sub>r</sub> type functional core [0025]. Plummer also teaches trimethylolpropane as a suitable molecule for the core [0034]. Plummer fails to teach glycidol as the building block.

Sunder teaches that glycidol is a commercially available and highly reactive AB<sub>2</sub> type monomer which can be polymerized to form hyperbranched polyethers, using trimethylolpropane as the starting unit (page 4240, abstract and last paragraph). Sunder discloses that the degree of branching obtained with such monomers is 53-59% (abstract). Given Sunder's teaching that using glycidol and TMP gives polymers with controlled and narrow molecular weight distributions (abstract), it would have been obvious to one of ordinary skill to use glycidol as the building block when preparing the

hyperbranched polymer containing a trimethylolpropane starter unit as taught by Plummer.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RACHEL KAHN whose telephone number is (571)270-7346. The examiner can normally be reached on Monday to Friday 8:00 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RACHEL KAHN/  
Examiner, Art Unit 4131

/David R. Sample/  
Supervisory Patent Examiner, Art Unit 4131

RK